

So the Rain Stays in the Plain

Crop Sequence CD Helps Farmers Fight Drought

It snowed a little on March 5 in Minot, North Dakota, close to the Canadian border. Farmers there were glad to see the snow because they know that when it melts it will provide precious water to the Northern Plains area, which is drier than usual this year.

While the situation doesn't seem as dire as it does for the eastern United States, it's still one that farmers kept in mind this past winter as they planned their spring planting.

"When we talk rotation in the Northern Great Plains," says Larry Kleingartner, executive director of the National Sunflower Association in Bismarck, North Dakota, "we're not talking corn one year and soybeans the next. We're talking about rotations in which soybean is but one among a dozen options." And some of those combinations will do better than others with less water. The trick is knowing which ones.

That's why Kleingartner and farmers in his association and elsewhere are clamoring for the Crop Sequence Calculator CD recently released by the Agricultural Research Service. It calculates crop performance with 100 combinations of 10 crops: barley, canola, crambe, dry bean, dry pea, flax, safflower, soybean, sunflower, and wheat.

The calculator uses data from several years' worth of research by ARS and others to provide producers with scientific research information on the sequencing of crops. To obtain crop-risk information for the calculator, a team of scientists at the ARS Northern Great Plains Research Laboratory in Mandan, North Dakota, grew all these combinations in 1999 and 2000 as part of a crop sequence project. The team—which includes a plant pathologist, three soil scientists, and three rangeland scientists—recorded data on crop production, plant diseases, weeds, crop water use, and amount of soil protected by crop residue.

The CD is a calculator of potential returns, a reference library, and a set of slide shows, some showing research results, all in one.

It even contains photo guides to the weeds, insects, and plant diseases likely to pose problems. And some of the slide shows

explain the basics of soil properties associated with soil quality, crop root growth and soil-water use, and pest management.

In addition to the Mandan team, Dave Archer, an ARS economist in Morris, Minnesota, Randy Anderson, an ARS weed scientist in Brookings, South Dakota, and Janet Knodel, a crop protection specialist at North Dakota State University in Minot, provided information on their areas of expertise.

Using the calculator with drought in mind, farmers would learn that planting a crop after beans or peas would be the best bet, since these use the least amount of soil water. Peas offer the best chance of leaving

the most soil water for the next crop.

And a farmer would find that planting peas before sunflowers promises the highest sunflower yield—1,490 pounds an acre. By plugging in a typical price of 9 cents a pound, the calculator would show gross earnings of \$134 an acre. By clicking on the "Production Economics" button, farmers could see an estimated average net return of \$42.41 per acre for that rotation, from the 1999 and 2000 experiments.

Safflower and sunflowers are the deepest rooting crops but are also among the lowest residue producers. Soil erosion could be a serious problem if low-residue crops are grown 2 years in a row. During drought years, the amount of residue is even less, which exposes the soil to greater evaporation and erosion.

The CD also lists useful web sites to go to for more information. The Crop Sequence Calculator can be ordered for free online from the Northern Great Plains Research Laboratory web site at <http://www.mandan.ars.usda.gov>.—By **Don Comis**, ARS.

This research is part of Soil Resource Management, an ARS National Program (#202) described on the World Wide Web at <http://www.nps.ars.usda.gov>.

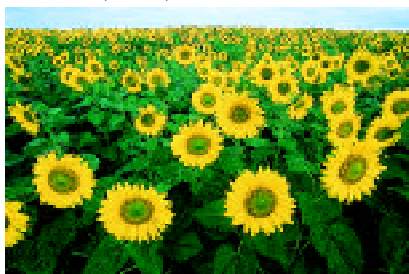
For more information about the CD, contact Joe Krupinsky at the USDA-ARS Northern Great Plains Research Laboratory, P.O. Box 459, Mandan, ND 58554; phone (701) 667-3011, fax (701) 667-3054, e-mail krupinskyj@mandan.ars.usda.gov. ♦

KEITH WELLER (K8397-15)



Beans.

BRUCE FRITZ (K5752-11)



Sunflowers.

MICHAEL THOMPSON (K7394-6)



Winter wheat.